

TABLE II—DATA ELEMENTS REQUIRED FOR VEHICLES UNDER SPECIFIED MINIMUM CONDITIONS—
Continued

Data element name	Condition for requirement	Recording interval/time ¹ (relative to time zero)	Data sample rate (per second)
Side curtain/tube air bag deployment, time to deploy, driver side.	If recorded	Event	N/A
Side curtain/tube air bag deployment, time to deploy, right side.	If recorded	Event	N/A
Pretensioner deployment, time to fire, driver.	If recorded	Event	N/A
Pretensioner deployment, time to fire, right front passenger.	If recorded	Event	N/A
Seat track position switch, foremost, status, driver.	If recorded	– 1.0 sec	N/A
Seat track position switch, foremost, status, right front passenger.	If recorded	– 1.0 sec	N/A
Occupant size classification, driver.	If recorded	– 1.0 sec	N/A
Occupant size classification, right front passenger.	If recorded	– 1.0 sec	N/A
Occupant position classification, driver.	If recorded	– 1.0 sec	N/A
Occupant position classification, right front passenger.	If recorded	– 1.0 sec	N/A

¹Pre-crash data and crash data are asynchronous. The sample time accuracy requirement for pre-crash time is – 0.1 to 1.0 sec (e.g. T = – 1 would need to occur between – 1.1 and 0 seconds.)

²“If recorded” means if the data is recorded in non-volatile memory for the purpose of subsequent downloading.

³“vehicle roll angle” may be recorded in any time duration; – 1.0 sec to 5.0 sec is suggested.

⁴List this element n – 1 times, once for each stage of a multi-stage air bag system.

§ 563.8 Data format.

(a) The data elements listed in Tables I and II, as applicable, must be reported in accordance with the range, accuracy, and resolution specified in Table III

TABLE III—REPORTED DATA ELEMENT FORMAT

Data element	Minimum range	Accuracy	Resolution
Lateral acceleration	– 5 g to +5 g	±10%	0.5 g.
Longitudinal acceleration	– 50 g to +50 g	±10%	0.5 g.
Normal acceleration	– 5 g to +5 g	±10%	0.5 g.
Longitudinal delta-V	– 100 km/h to + 100 km/h	±10%	1 km/h.
Lateral delta-V	– 100 km/h to + 100 km/h	±10%	1 km/h.
Maximum delta-V, longitudinal	– 100 km/h to + 100 km/h	±10%	1 km/h.
Maximum delta-V, lateral	– 100 km/h to + 100 km/h	±10%	1 km/h.
Time, maximum delta-V, longitudinal.	0–300 ms, or 0–End of Event Time plus 30 ms, whichever is shorter.	±3 ms	2.5 ms.
Time, maximum delta-V, lateral.	0–300 ms, or 0–End of Event Time plus 30 ms, whichever is shorter.	±3 ms	2.5 ms.
Time, maximum delta-V, resultant.	0–300 ms, or 0–End of Event Time plus 30 ms, whichever is shorter.	±3 ms	2.5 ms.
Vehicle roll angle	– 1080 deg to + 1080 deg	±10%	10 deg.
Speed, vehicle indicated	0 km/h to 200 km/h	±1 km/h	1 km/h.
Engine throttle, percent full (accelerator pedal percent full).	0 to 100%	±5%	1%.
Engine RPM	0 to 10,000 rpm	± 100 rpm.	100 rpm.
Service brake (on, off)	On and Off	N/A	On and Off.
ABS activity	On and Off	N/A	On and Off.
Stability control (on, off, engaged).	On, Off, Engaged	N/A	On, Off, Engaged.
Steering input	– 250 deg CW to + 250 deg CCW.	±5%	1%.
Ignition cycle, crash	0 to 60,000	±1 cycle	1 cycle.
Ignition cycle, download	0 to 60,000	±1 cycle	1 cycle.
Safety belt status, driver	On or Off	N/A	On or Off.
Safety belt status, right front passenger.	On or Off	N/A	On or Off.

TABLE III—REPORTED DATA ELEMENT FORMAT—Continued

Data element	Minimum range	Accuracy	Resolution
Frontal air bag warning lamp (on, off).	On or Off	N/A	On or Off.
Frontal air bag suppression switch status.	On, Off, or Auto	N/A	On, Off, or Auto.
Frontal air bag deployment, time to deploy/first stage, driver.	0 to 250 ms	±2 ms	1 ms.
Frontal air bag deployment, time to deploy/first stage, right front passenger.	0 to 250 ms	±2 ms	1 ms.
Frontal air bag deployment, time to ⁿ th stage, driver.	0 to 250 ms	±2 ms	1 ms.
Frontal air bag deployment, time to ⁿ th stage, right front passenger.	0 to 250 ms	±2 ms	1 ms.
Frontal air bag deployment, ⁿ th stage disposal, driver (y/n).	Yes or No	N/A	Yes or No.
Frontal air bag deployment, ⁿ th stage disposal, right front passenger (y/n).	Yes or No	N/A	Yes or No.
Side air bag deployment, time to deploy, driver.	0 to 250 ms	±2 ms	1 ms.
Side air bag deployment, time to deploy, right front passenger.	0 to 250 ms	±2 ms	1 ms.
Side curtain/tube air bag deployment, time to deploy, driver side.	0 to 250 ms	±2 ms	1 ms.
Side curtain/tube air bag deployment, time to deploy, right side.	0 to 250 ms	±2 ms	1 ms.
Pretensioner deployment, time to fire, driver.	0 to 250 ms	±2 ms	1 ms.
Pretensioner deployment, time to fire, right front passenger.	0 to 250 ms	±2 ms	1 ms.
Seat track position switch, foremost, status, driver.	Yes or No	N/A	Yes or No.
Seat track position switch, foremost, status, right front passenger.	Yes or No	N/A	Yes or No.
Occupant size driver occupant 5 th female size (y/n).	Yes or No	N/A	Yes or No.
Occupant position size right front passenger child (y/n).	Yes or No	N/A	Yes or No.
Occupant position classification, driver oop (y/n).	Yes or No	N/A	Yes or No.
Occupant position classification, right front passenger oop (y/n).	Yes or No	N/A	Yes or No.
Multi-event, number of events (1, 2).	1 or 2	N/A	1 or 2.
Time from event 1 to 2	0 to 5.0 sec	0.1 sec	0.1 sec.
Complete file recorded (y/n)	Yes or No	N/A	Yes or No.

(b) Acceleration Time-History data and format: the longitudinal, lateral, and normal acceleration time-history data, as applicable, must be filtered either during the recording phase or during the data downloading phase to include:

(1) The Time Step (TS) that is the inverse of the sampling frequency of the acceleration data and which has units of seconds;

(2) The number of the first point (NFP), which is an integer that when multiplied by the TS equals the time relative to time zero of the first acceleration data point;

(3) The number of the last point (NLP), which is an integer that when multiplied by the TS equals the time relative to time zero of the last acceleration data point; and

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(4) NLP—NFP + 1 acceleration values sequentially beginning with the acceleration at time NFP * TS and continue sampling the acceleration at TS increments in time until the time NLP * TS is reached.

[73 FR 2183, Jan. 14, 2008]

EFFECTIVE DATE NOTE: At 76 FR 47488, Aug. 5, 2011, § 563.8 was amended by revising Table III in paragraph (a), effective October 4, 2011. For the convenience of the user, the revised text is set forth as follows:

§ 563.8 Data format.

(a) * * *

TABLE III—REPORTED DATA ELEMENT FORMAT

Data element	Minimum range	Accuracy ¹	Resolution
Lateral acceleration	At option of manufacturer	At option of manufacturer	At option of manufacturer.
Longitudinal acceleration	At option of manufacturer	At option of manufacturer	At option of manufacturer.
Normal Acceleration	At option of manufacturer	At option of manufacturer	At option of manufacturer.
Longitudinal delta-V	– 100 km/h to + 100 km/h	±10%	1 km/h.
Lateral delta-V	– 100 km/h to +100 km/h	±10%	1 km/h.
Maximum delta-V, longitudinal	– 100 km/h to +100 km/h	±10%	1 km/h.
Maximum delta-V, lateral	– 100 km/h to +100 km/h	±10%	1 km/h.
Time, maximum delta-V, longitudinal.	0–300 ms, or 0—End of Event Time plus 30 ms, whichever is shorter.	±3 ms	2.5 ms.
Time, maximum delta-V, lateral	0–300 ms, or 0—End of Event Time plus 30 ms, whichever is shorter.	±3 ms	2.5 ms.
Time, maximum delta-V, resultant.	0–300 ms, or 0—End of Event Time plus 30 ms, whichever is shorter.	±3 ms	2.5 ms.
Vehicle Roll Angle	– 1080 deg to +1080 deg	±10%	10 deg.
Speed, vehicle indicated	0 km/h to 200 km/h	±1 km/h	1 km/h.
Engine throttle, percent full (accelerator pedal percent full).	0 to 100%	±5%	1%.
Engine rpm	0 to 10,000 rpm	±100 rpm	100 rpm.
Service brake	On or Off	N/A	On or Off.
ABS activity	On or Off	N/A	On or Off.
Stability control	On, Off, or Engaged	N/A	On, Off, or Engaged.
Steering input	±100%	±5%	1%.
Ignition cycle, crash	0 to 60,000	±1 cycle	1 cycle.
Ignition cycle, download	0 to 60,000	±1 cycle	1 cycle.
Safety belt status, driver	On or Off	N/A	On or Off.
Safety belt status, right front passenger.	On or Off	N/A	On or Off.
Frontal air bag warning lamp ..	On or Off	N/A	On or Off.
Frontal air bag suppression switch status, right front passenger.	On, Off, or Auto	N/A	On, Off, or Auto.
Frontal air bag deployment, time to deploy/first stage, driver.	0 to 250 ms	±2 ms	1 ms.
Frontal air bag deployment, time to deploy/first stage, right front passenger.	0 to 250 ms	±2 ms	1 ms.
Frontal air bag deployment, time to nth stage, driver.	0 to 250 ms	±2 ms	1 ms.
Frontal air bag deployment, time to nth stage, right front passenger.	0 to 250 ms	±2 ms	1 ms.
Frontal air bag deployment, nth stage disposal, driver.	Yes or No	N/A	Yes or No.
Frontal air bag deployment, nth stage disposal, right front passenger.	Yes or No	N/A	Yes or No.
Side air bag deployment, time to deploy, driver.	0 to 250 ms	±2 ms	1 ms.
Side air bag deployment, time to deploy, right front passenger.	0 to 250 ms	±2 ms	1 ms.
Side curtain/tube air bag deployment, time to deploy, driver side.	0 to 250 ms	±2 ms	1 ms.
Side curtain/tube air bag deployment, time to deploy, right side.	0 to 250 ms	±2 ms	1 ms.

TABLE III—REPORTED DATA ELEMENT FORMAT—Continued

Data element	Minimum range	Accuracy ¹	Resolution
Pretensioner deployment, time to fire, driver.	0 to 250 ms	±2 ms	1 ms.
Pretensioner deployment, time to fire, right front passenger.	0 to 250 ms	±2 ms	1 ms.
Seat track position switch, foremost, status, driver.	Yes or No	N/A	Yes or No.
Seat track position switch, foremost, status, right front passenger.	Yes or No	N/A	Yes or No.
Occupant size classification, driver.	5th percentile female or larger	N/A	Yes or No.
Occupant size classification, right front passenger.	Child	N/A	Yes or No.
Occupant position classification, driver.	Out of position	N/A	Yes or No.
Occupant position classification, right front passenger.	Out of position	N/A	Yes or No.
Multi-event, number of event ...	1 or 2	N/A	1 or 2.
Time from event 1 to 2	0 to 5.0 sec	0.1 sec	0.1 sec.
Complete file recorded	Yes or No	N/A	Yes or No.

¹ Accuracy requirement only applies within the range of the physical sensor. If measurements captured by a sensor exceed the design range of the sensor, the reported element must indicate when the measurement first exceeded the design range of the sensor.

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§ 563.9 Data capture.

The EDR must capture and record the data elements for events in accordance with the following conditions and circumstances:

(a) In a frontal or side air bag deployment crash, capture and record the current deployment data, up to two events. The memory for each air bag deployment event must be locked to prevent any future overwriting of these data.

(b) In a deployment event that involves another type of deployable restraint (e.g., pretensioners, knee bolsters, pedestrian protection, etc.), or in a non-deployment event that meets the trigger threshold, capture and record the current non-deployment data, up to two events, subject to the following conditions:

(1) If an EDR non-volatile memory buffer void of previous-event data is available, the current non-deployment event data is recorded in the buffer.

(2) If an EDR non-volatile memory buffer void of previous-event data is not available, the manufacturer may choose either to overwrite the previous non-deployment event data with the current non-deployment event data, or not to record the current non-deployment event data.

(3) EDR buffers containing previous deployment-event data must not be overwritten by the current non-deployment event data.

[73 FR 2184, Jan. 14, 2008]

EFFECTIVE DATE NOTE: At 76 FR 47489, Aug. 5, 2011, § 563.9 was revised, effective October 4, 2011. For the convenience of the user, the revised text is set forth as follows:

§ 563.9 Data capture.

The EDR must capture and record the data elements for events in accordance with the following conditions and circumstances:

(a) In a frontal air bag deployment crash, capture and record the current deployment data. In a side or side curtain/tube air bag deployment crash, where lateral delta-V is recorded by the EDR, capture and record the current deployment data. The memory for the air bag deployment event must be locked to prevent any future overwriting of the data.

(b) In an event that does not meet the criteria in § 563.9(a), capture and record the current event data, up to two events, subject to the following conditions:

(1) If an EDR non-volatile memory buffer void of previous-event data is available, the current event data is recorded in the buffer.

(2) If an EDR non-volatile memory buffer void of previous-event data is not available, the manufacturer may choose to either overwrite any previous event data that does not deploy an air bag with the current event data, or to not record the current event data.